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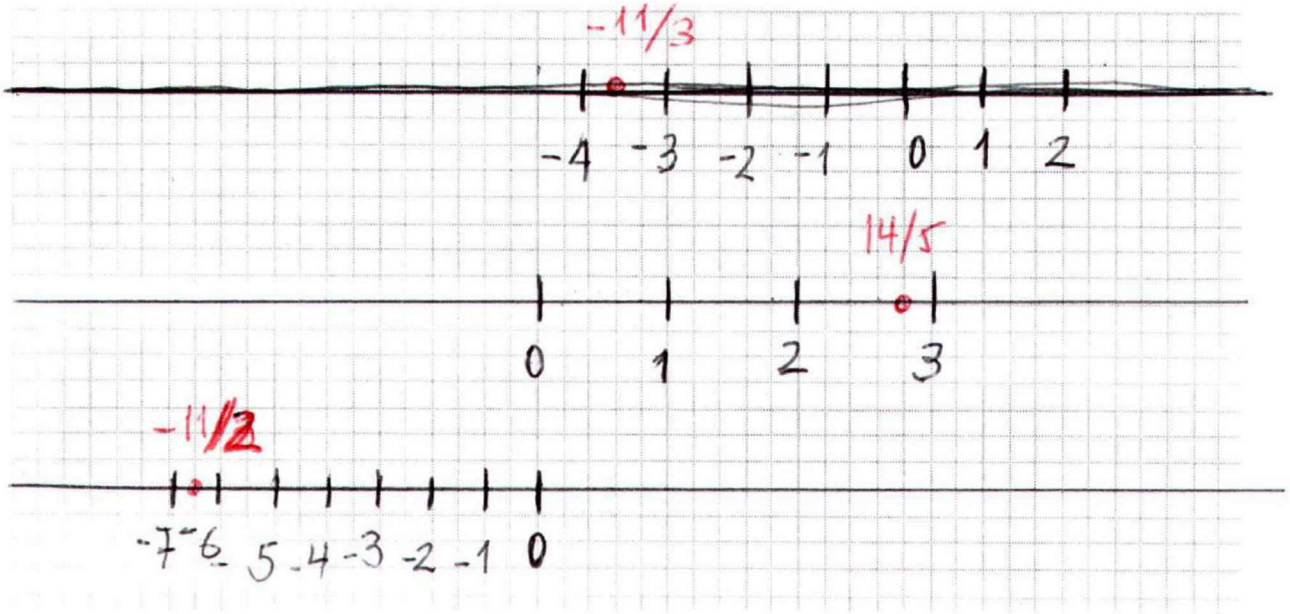
Lesson 07 and 08: Fractions and fraction operations. AD

1. Represent the following fractions on the number line: $a)\frac{-11}{3}; b)\frac{14}{5}; c)\frac{-13}{2}$. You can draw a line for each fraction:



2. Get the resulting simplest fraction: $\frac{1}{4}:\left[\frac{3}{4}-3\cdot\left(2-\frac{8}{5}\right)\right]$

$$= \frac{1}{4}:\left[\frac{3}{4}-3\cdot\left(\frac{10}{5}-\frac{8}{5}\right)\right] = \frac{1}{4}:\left[\frac{3}{4}-3\cdot\frac{2}{5}\right] =$$

$$= \frac{1}{4}:\left[\frac{3}{4}-\frac{6}{5}\right] = \frac{1}{4}:\left[\frac{15}{20}-\frac{24}{20}\right] =$$

$$= \frac{1}{4}:\left[\frac{-9}{20}\right] = -\frac{20}{36} = -\frac{10}{18} = \boxed{-\frac{5}{9}}$$

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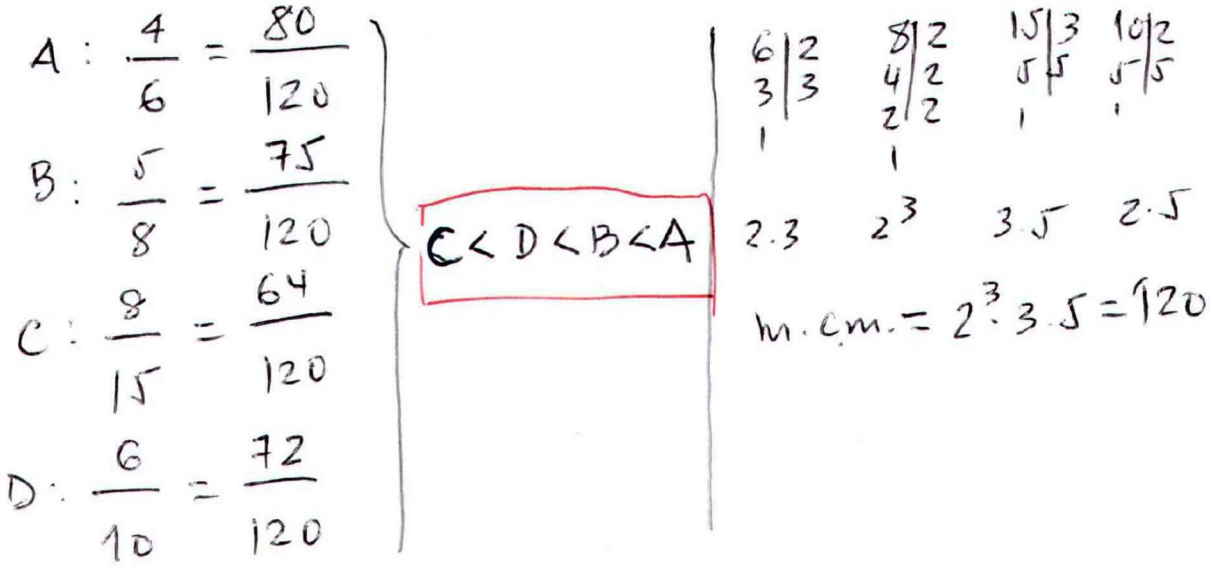
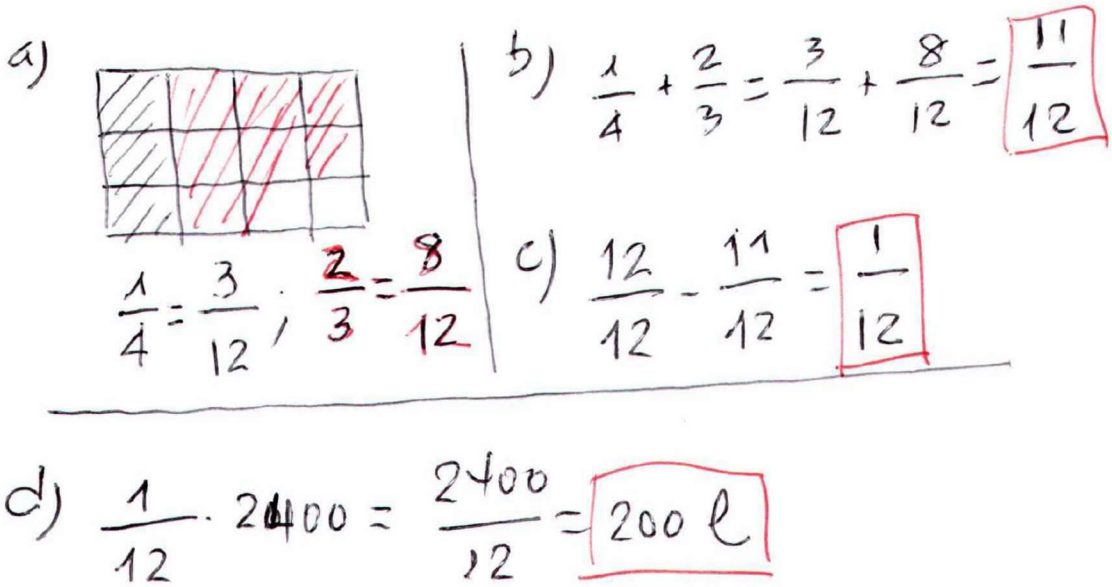
3. This is a table that gathers the information about the effectiveness of four basketball players. Order the players by their effectiveness.

Player	A	B	C	D
Field goals	4	5	8	6
Throws	6	8	15	10



4. A tap fills $\frac{1}{4}$ of a tank in an hour and another fills $\frac{2}{3}$ of it in an hour.

a. Draw the tank and the filled part by each tap. You can draw two different pictures, one for each.
b. What part do they fill in an hour together?
c. What portion is empty after an hour?
d. If the tank is 2400 litres of capacity, what is the volume of the empty part?



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5. Convert these mixed numerals to improper fraction form:

a) $2\frac{5}{8}$ b) $3\frac{4}{5}$

Convert these fractions to mixed numeral form:

c) $\frac{12}{5}$ d) $\frac{37}{8}$

a) $2\frac{5}{8} = \boxed{\frac{21}{8}}$; b) $3\frac{4}{5} = \boxed{\frac{19}{5}}$

c) $\frac{12}{5} = \boxed{2\frac{2}{5}}$; $\frac{37}{8} = \boxed{4\frac{5}{8}}$

12 | 5 — 2 | 2

37 | 8 — 5 | 4

6. a) What do you have to do to compare fractions?

We can do it in two different ways:

1) To get the decimal value

2) To reduce to common denominator

b) What is the letter we use to represent rational numbers?

$\mathbb{Q}$

e) What is an improper fraction? Write an example.

It is a fraction whose denominator is greater than the numerator.

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d) What is the order of the operations?

1st: Parenthesis
2nd: Powers and roots
3rd: Products and divisions
4th: Sums and substractions.

7. Get the resulting fraction: $\dfrac{\frac{3}{5}-7}{\frac{2}{3}+\frac{4}{5}} - \dfrac{2}{5-\frac{7}{3}} =$

$$\frac{\frac{3}{5}-\frac{35}{5}}{\frac{10}{15}+\frac{12}{15}} - \frac{2}{\frac{15}{3}-\frac{7}{3}} = \frac{\frac{-32}{5}}{\frac{22}{15}} - \frac{2/1}{\frac{8}{3}} =$$

$$= -\frac{32.15}{5.22} - \frac{2.3}{8.1} = -\frac{480}{110} - \frac{6}{8} =$$

$$= \frac{-48}{11} - \frac{3}{4} = \frac{-192}{44} - \frac{33}{44} = \boxed{\frac{-225}{44}}$$

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8. Calculate the decimal value for the following fractions and classify them according to the result. Include the operation to get the decimal expression for each.

$a)\ \frac{59}{6} =$	$b)\ \frac{117}{13} =$	$c)\ \frac{27}{8} =$
$a)\ \frac{59}{6} = 9'8\hat{3}$ repeating decimal 59 | 6 50 9'83... 20 2	$b)\ \frac{117}{13} = 9$ Integer 117 | 13 00 9	$c)\ \frac{27}{8} = 3'375$ finite decimal 27 | 8 30 3'375 60 40 0

9. Convert the following decimal numbers into a fraction in simplest form; that is, you must reduce the fraction as much as possible.

a) -2'5; b) 20'4; c) -0'06

a) $-2'5 = \frac{-25}{10} = \boxed{\frac{-5}{2}}$

b) $20'4 = \frac{204}{10} = \boxed{\frac{102}{5}}$

c) $-0'06 = \frac{-6}{100} = \boxed{\frac{-3}{50}}$

10. Calculate the following powers:

a) $\left(\frac{3}{5}\right)^3$; b) $\left(\frac{-2}{7}\right)^2$

a) $\left(\frac{3}{5}\right)^3 = \left(\frac{3}{5}\right)\left(\frac{3}{5}\right)\left(\frac{3}{5}\right) = \frac{27}{125}$

b) $\left(\frac{-2}{7}\right)^2 = \left(\frac{-2}{7}\right)\left(\frac{-2}{7}\right) = \frac{4}{49}$